

## Region 8

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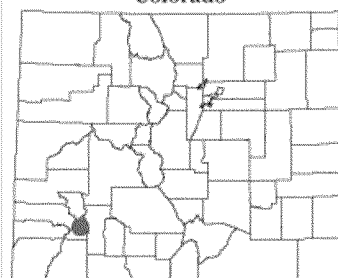
## Upper Cement Creek



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### Colorado



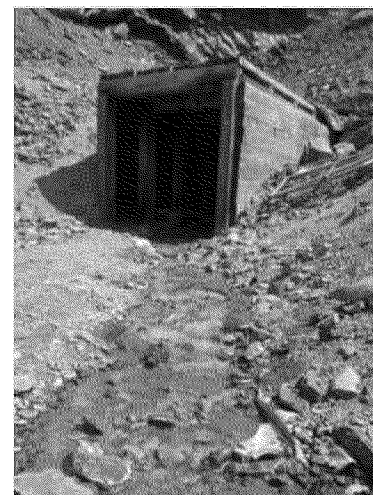
City: Silverton County: San Juan

## Background

Updated November 2011

EPA conducted an initial site assessment in the 1990s to determine mining-related loads to the Cement Creek drainage and eligibility for the Superfund National Priorities List (NPL). Based on community input and proposals from the Animas River Stakeholders Group (ARSG), EPA did not pursue the NPL listing and has consistently supported the ARSG since 1997. EPA has provided significant funding, staff support and other activities to complement community-led water quality improvements.

Despite progress in areas of the watershed, water quality in Upper Cement Creek has deteriorated and is negatively impacting the Animas River. EPA is aware that the area is highly mineralized and complex due to faults and fractures; however, after a tunnel was plugged in approximately 2004 and water treatment stopped, flows from upgradient mines have increased significantly. The mining-impacted areas are contributing significant metals-laden discharges and need to be addressed. These areas have complex hydro-geological conditions that need further characterization and will likely require high-dollar solutions.



Acid mine drainage from an adit in Upper Cement Creek

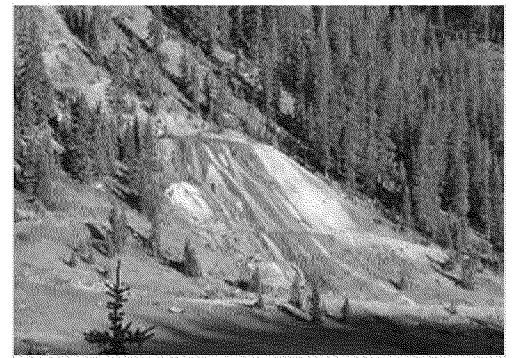
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## Re-Assessment Sampling Results

Results from samples taken between May 2009 and October 2010 indicate that water quality is worsening in the Upper Cement Creek area. ARSG members including EPA and Bureau of Land Management

(BLM) agree that this deterioration is impacting the Animas River. EPA believes metals loading in Upper Cement Creek may also explain the loss of three species of trout in the past several years.

Sampling by EPA and the ARSG confirms significant increases in the levels of cadmium, zinc and lead in Upper Cement Creek since 2004 when treatment operations ceased. High levels of arsenic, cadmium, copper and lead concentrations have also been documented in mine waste samples throughout the watershed.



Acid mine drainage from the Red and Bonita Mine in Silverton, Colorado

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## Next Steps

EPA believes an effective and implementable approach to improving water quality is essential and possible. We would like to continue to work with stakeholders to identify ways to reduce contamination in Upper Cement Creek and the Animas River.

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## Frequently Asked Questions

It is common knowledge that Cement Creek was named for its high mineralization. Why is cleanup needed given the naturally-occurring metals?

EPA and BLM are aware of historical anecdotal accounts of the water quality in some of the watersheds within the Red Mountain District being naturally impacted by heavy metals. However, more recent studies have documented elevated metals loads—copper, cadmium, lead, manganese and zinc—that are attributable to increased flows from uncontrolled and unpermitted mine discharges since the American Tunnel was plugged (1996, 2001 and 2002) and water treatment ceased (2004).

Why is water quality worsening in Upper Cement Creek?

Water quality in Upper Cement Creek has deteriorated since a tunnel was plugged in approximately 2004 and water treatment stopped. Flows from upgradient mines have increased significantly. The lack of treatment also allows metals-laden water to be directly released to the creek and the Animas River.

What areas are most impacting Upper Cement Creek?

The largest sources of unremediated mine waste and uncontrolled releases in Upper Cement Creek (above Gladstone) include the Gold King 7 Level Mine, American Tunnel, Red and Bonita Mine, Mogul Mine, Mogul North Mine (also known as the Mogul Sublevel 1) and Grand Mogul Mine.

Why is EPA getting involved now?

EPA has been involved since the 1990s, when the community requested that EPA not use NPL listing to address contamination. EPA honored that request, predicated on demonstrable improvements in water quality in the Animas River. Since then EPA has consistently supported the Animas River Stakeholders Group with money, EPA staff resources, and actions that complemented community-led efforts to improve water quality. Despite some progress in parts of the watershed, water quality has deteriorated in Upper Cement Creek and is negatively impacting the Animas River.

What were the results of recent sampling events?

In August and September of 1999, as well as September 2004, members of the Animas River Stakeholders Group (ARSG) observed increased flows from some Upper Cement Creek mines. EPA and ARSG member data from 2005 and 2006 also noted increased flows and increased metals concentrations from these Upper Cement Creek mines. The EPA and other ARSG members had not fully characterized the changing Upper Cement Creek water quality due to the presence of active or permitted mining company involvement until approximately 2006.

In 2009, EPA and ARSG members began implementing a water quality sampling program to characterize the changing situation. The increased metals loads from the largest untreated mine discharges in Cement Creek contain more than eight times the amount of copper and between eight and 30 times the amount of zinc that Sunnyside Gold Corporation was allowed to discharge while they were treating water.

Has fishing in the Animas River been impacted by worsening water quality in Upper Cement Creek?

The ARSG shared results from a 2010 Colorado Division of Wildlife (DOW) electro-fishing event, which show that only brook trout were caught in the Animas near Cascade Creek. Records from DOW document brown, rainbow, and cutthroat or cutbow trout at that same location in 2005, showing a decline in water quality supporting fish in the river. At Elk Park, which is about five miles downstream of Silverton, there were also declines in numbers and size classes of brook trout, the only species recorded. At this time, the amount of metals that need removal to improve water quality and fisheries in the Animas River are being evaluated.

Has EPA decided to turn Upper Cement Creek into a Superfund site?

EPA is engaging with the ARSG, the citizens of Silverton, San Juan County and others who are concerned to help identify approaches designed to effect water quality improvement. EPA is open to exploring any viable and comprehensive alternative to NPL listing that can address a challenge of this magnitude.

Can ARSG fix the problem with Sunnyside's offer of \$6.5 million?

We commend Sunnyside for their offer to be a part of a solution. We also value the hard work of ARSG and we look forward to their help on the path forward. While Sunnyside's offer is a step in the right direction, we believe three questions need to be answered before any work can begin:

1. What is the best technical solution and total price tag, including any potential long-term costs?
2. Are there parties that are potentially responsible for this problem and what resources could they potentially contribute to a solution?
3. What is the framework for implementing a solution to make sure there is accountability for commitments and resolution of existing environmental liability?

Is Superfund a possibility for cleanup, and if so, what can Superfund offer?

Yes. NPL listing can offer both money and technical expertise; however, EPA and other federal agencies that implement CERCLA look for responsible parties to help with the remediation.

NPL Pros:

- More funding over long-term.
- Finds best options for comprehensive solutions (can also test new technologies).
- Requires local community involvement.
- Allows the BLM to prioritize funding and helps with mixed ownership issues.
- Potential specialized training and job training grants.
- Potential economic benefits of increased jobs related to clean up.
- Potential local technical assistance grant money.
- Resolution of existing environmental liability.

If responsible parties are viable...

- Liable and viable parties can participate in the cleanup.
- EPA can do the work and recover costs later.
- Follows the "polluter pays" principle, reduces tax payers' costs.

NPL Cons:

- It takes time for the final remedy to be selected.
- Sites compete with each other for funding—but this happens in all our programs and Superfund listed sites are prioritized for funding.
- Perceived stigma—some believe mining or other businesses may not invest in the Silverton area. In fact, there has been ongoing exploration in Creede, Colorado during proposal, listing and the remedial investigation at the Nelson Tunnel Superfund Site.

Is there an option that gets to the benefits outlined above without the Superfund label?

Yes, the Superfund alternative (SA) approach uses the same investigation and cleanup process and standards that are used for sites listed on the NPL. The SA approach is an alternative to listing a site on the NPL; it is not an alternative to Superfund or the Superfund process. This approach requires that a party enter into an SA approach agreement with EPA.

How would EPA involvement impact future mining? EPA is supportive of responsible mining in the watershed. If private enterprises were to mine Upper Cement Creek mines that currently discharge uncontrolled and unpermitted

releases to Cement Creek, EPA would be interested in defining a win-win solution, so that the mining interests could access those resources while properly managing their appropriately bonded and permitted operations, including solid waste and water discharges. EPA involvement would also resolve existing environmental liability that may otherwise be inhibiting investment. That being said, EPA is not involved in permitting or overseeing active mining interests. The State of Colorado, Division of Reclamation, Mining and Safety and the State of Colorado Water Quality Control Division have this responsibility.

Can EPA really participate in a collaborative community process to determine a solution?

EPA remains firmly committed to working with the community and ARSG; however, EPA has a mission to protect human health and the environment and must follow statutory, regulatory and policy requirements. This also means that EPA must be accountable for how we spend our time and money so we would need a legal framework to put our resources into the mix. We believe it is important to identify and carefully consider all approaches, including NPL listing.

If a water treatment plant were the selected remedy, how much would it cost to construct and operate?

It is difficult to say right now how much it might cost to construct a water treatment plant. Construction costs likely range between \$24 million and \$36 million, depending on design flow rates. Operation and maintenance of a plant would be an additional cost.

The estimated cost of a water treatment plant that is currently being designed (30 percent design) for the Central City/Clear Creek area is \$14.2 million. We anticipate this cost may be lowered as the design is refined. The design flow rate is 600 gallons per minute. A water treatment plant with a design flow rate of 1,400 gallons per minute for the Summitville Mine cost approximately \$17 million to construct.

Is the resistance from some in the community to Superfund a potential deal breaker?

EPA's goal is like that of other stakeholders in that we want to see water quality improve. Listing a site on the NPL is not the only possible path to reach that goal. NPL listing is however a real, viable and comprehensive option when faced with a challenge of this magnitude. While there is never complete consensus in a community when it comes to NPL listing, EPA strives to meaningfully engage community members and achieve significant community support prior to proposing a new NPL site.

Are concerns about past problems with Superfund at other sites in the state deserved?

EPA admits that we have had many challenges and made mistakes during our 31-year history administering Superfund, but some perceptions are based on inaccurate information. We also believe that our mistakes have provided us opportunities to learn, improve our processes, and commit staff members who truly do their best to improve the situation in every community we work with.

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## Site Documents

Map of Upper Cement Creek Sample Locations, March 10, 2011 (8.6MB)

Map of Upper Cement Creek Sample Locations – Mogul Area, March 10, 2011 (4.4MB)

Overview of Sample Locations: Animas River, Mineral Creek, and Cement Creek, August 5, 2009 (2MB)

You will need Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more.

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## Links

Animas River Stakeholders Group [EXIT Disclaimer](#)

USGS Open-File Report 2007-1048: Chemical and hydrologic data from the Cement Creek and upper Animas River confluence and mixing zone, Silverton, Colorado, September 1997

Interstate Technology & Regulatory Council: Mining Waste Treatment Technology Selection—Case Study—Cement Creek Mine—San Juan County, Colorado [EXIT Disclaimer](#)

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